

Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Horseshoe Creek

Waterbody Segment at a Glance:

County: Lafayette, Jackson
Nearby Cities: Oak Grove
Length of impairment: 3.1 miles
Pollutants: Biochemical Oxygen Demand (BOD) and Ammonia
Source: Oak Grove North and South Wastewater Lagoons



State map showing location of watershed

Added to the 2002 303(d) list

TMDL Priority Ranking: High

Description of the Problem

Beneficial uses of Spring Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

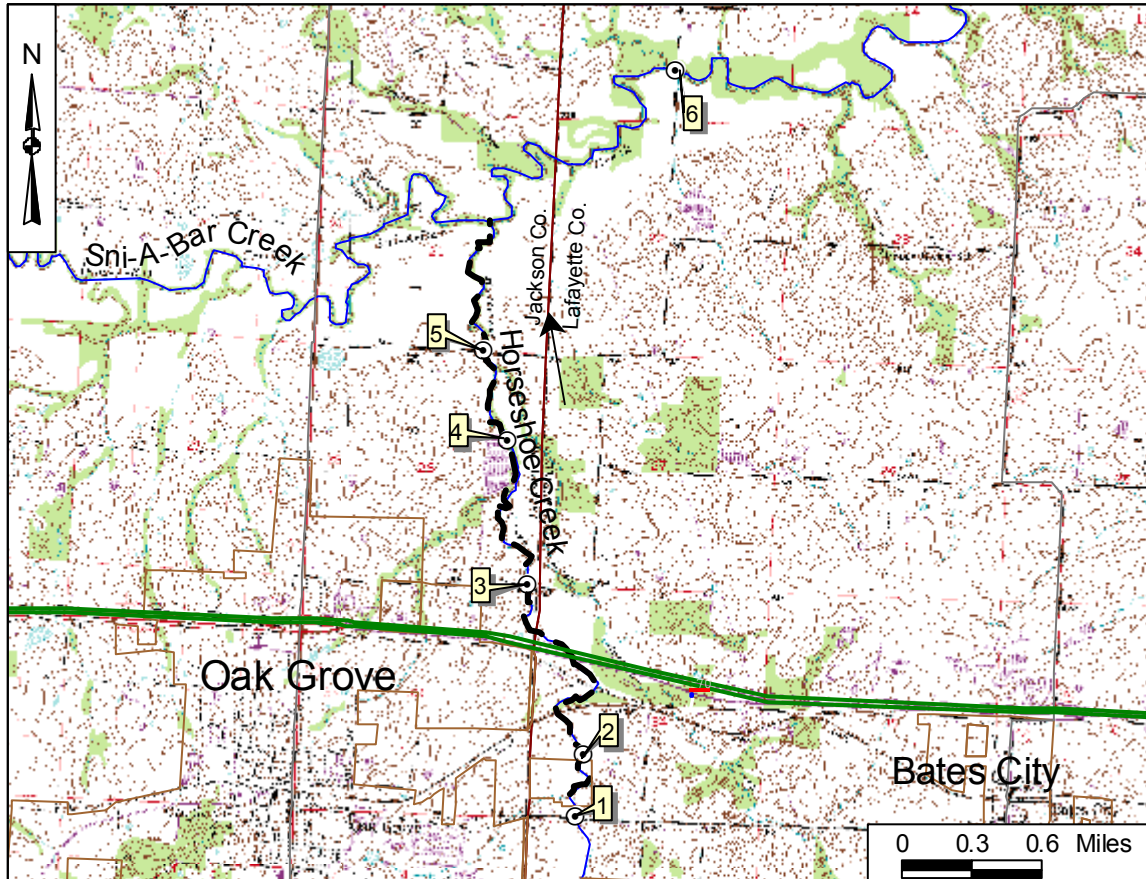
- The Missouri Water Quality Standard (WQS), found in 10 CSR 20-7.031 Table A, for dissolved oxygen (related to BOD) in streams is 5.0 mg/L (milligrams per liter or parts per million). A value less than 5 mg/L is allowable if it represents the normal "background" condition of a stream.
- The standards for ammonia vary with water temperature and pH. At typical temperatures and pHs, a summer ammonia standard would be 1.2 mg/L and a winter standard 2.1 mg/L. These values are taken from Table B in 10 CSR 20-7.031.

Background Information and Water Quality Data

Conditions in Horseshoe Creek are not protective of aquatic life. In recent Water Quality Studies, the creek was found to be high in ammonia. Ammonia is a common by-product of wastewater treatment and under certain conditions can be toxic to aquatic life. Also, low levels of oxygen were documented in the creek. Many aquatic organisms require high levels of oxygen to survive. Dissolved oxygen in a stream is lowered by wastewater that is high in BOD. Both of these conditions

are due to the discharges from the Oak Grove Lagoons. Like all wastewater discharges in Missouri, these lagoons have to meet the requirements of a discharge permit issued by Missouri Department of Natural Resources. Water quality studies of Horseshoe Creek and West Fork Sni-A-Bar Creek downstream of Horseshoe Creek were made in August 2001 and July 2003. The water quality data from these studies are shown in the table below, along with a map of the creek.

**Horseshoe Creek in Lafayette and Jackson Counties, Missouri,
showing the impaired segment and the sampling sites**



--- Impaired Segment ← Direction of flow

Sampling Sites

- 1 – Horseshoe Creek 0.1 mile upstream of South Lagoon
- 2 – Discharge from South Lagoon
- 3 – Horseshoe Creek 1.1 mile downstream of South Lagoon
- 4 – Discharge from North Lagoon
- 5 – Horseshoe Creek 0.4 mile downstream of North Lagoon
- 6 – Sni-A-Bar Creek 2 miles downstream of mouth of Horseshoe Creek

Summary of Water Quality Studies on Horseshoe Creek by the Department of Natural Resources, August 2001 and July 2003					
Site #	Flow (cubic feet per second)	Water Temperature (in degrees Celsius)	pH	Ammonia as Nitrogen (mg/L)	Early Morning Dissolved Oxygen (mg/L)*
1	0.25	26	7.6	<0.03	3.3
2	0.55	28	7.6	20.4	1.4
3	0.25	25	7.5	13.9	1.7
4	0.35	28	7.9	5.23	2.1
5	0.46	25.5	7.6	7.73	0.7
6	7.80	28	7.5	0.19	3.3

*To be most protective of water quality, DO is measured in the early morning, when it is at its lowest.

For more information call or write:

Missouri Department of Natural Resources

Water Protection Program

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